

Attorney Docket No. 1999.452 US C1

In the Claims

1-5. (Canceled)

6. (Previously Presented) A method for administering a live attenuated bacterial vaccine to a mammal, comprising:

injecting into a submucosal layer of a mammal an immunogenically effective amount of a live attenuated bacterium.

7. (Previously Presented) The method according to claim 6, wherein the live attenuated bacterium is selected from the group consisting of *Actinobacillus equuli*, *A. pleuropneumoniae*, *Actinomyces pyogenes*, *Bordetella bronchiseptica*, *Brucella abortus*, *Clostridium perfringens*, *Corynebacterium bovis*, *C. pseudotuberculosis*, *Erysipelothrix rhusiopathiae*, *Escherichia coli*, *Haemophilus parasuis*, *Leptospira canicola*, *L. hardjo*, *L. icterohaemorrhagiae*, *L. pomona*, *Mycobacterium bovis*, *Mycoplasma bovis*, *M. hyopneumoniae*, *Nocardia asteroides*, *Pasteurella haemolytica*, *P. multocida*, *Pseudomonas mallei*, *Rhodococcus equi*, *Salmonella choleraesuis*, *S. dublin*, *S. typhimurium*, *Serpulina hyodysenteriae*, *Staphylococcus aureus*, *Streptococcus agalactiae*, *St. equi*, *St. pneumoniae*, *St. suis*, *St. uberis*, or *St. zooepidemicus*.

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8. (Currently Amended) The method according to claim 6, wherein the mammal is a horse, ~~cattle~~ ruminant, a pig or a dog.

9. (Previously Presented) A method for reducing the amount of adverse reactions in a mammal at an injection site of a live attenuated bacterial vaccine, comprising:

administering submucosally said vaccine, whereby the amount of adverse reactions at the injection site is reduced,

wherein the live attenuated bacterial vaccine comprises bacteria that cause abscess formation when administered intramuscularly and reduction is measured by the amount or size of abscesses or lesions at the mucosal injection site compared to the intramuscular injection site.

10. (Previously Presented) The method according to claim 9, wherein said vaccine is administered into the submucosa of the labiae.

11. (Previously Presented) The method according to claim 9, wherein said live attenuated bacterium is selected from the group consisting of *Actinobacillus equili*, *A. pleuropneumoniae*, *Actinomyces pyogenes*, *Bordetella bronchiseptica*, *Brucella abortus*, *Clostridium perfringens*, *Corynebacterium bovis*, *C. pseudotuberculosis*, *Erysipelothrix rhusiopathiae*, *Escherichia*

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*coli*, *Haemophilus parasuis*, *Leptospira canicola*, *L. hardjo*, *L. icterohaemorrhagiae*, *L. pomona*, *Mycobacterium bovis*, *Mycoplasma bovis*, *M. hyopneumoniae*, *Nocardia asteroides*, *Pasteurella haemolytica*, *P. multocida*, *Pseudomonas mallei*, *Rhodococcus equi*, *Salmonella choleraesuis*, *S. dublin*, *S. typhimurium*, *Serpulina hyodysenteriae*, *Staphylococcus aureus*, *Streptococcus agalactiae*, *St. equi*, *St. pneumoniae*, *St. suis*, *St. uberis*, or *St. zooepidemicus*.